

the RARS

Exciter

Raleigh Amateur Radio Society



December, 2002 Number 381

Happy Holidays



Photo by
Robert
K2RTB

The Exciter

The **Exciter** is the monthly newsletter of the Raleigh Amateur Radio Society. It is available in both printed and electronic form. The printed version is mailed to members just before each club meeting. The electronic form, in Adobe Acrobat PDF format, is e-mailed about a week earlier.

We solicit both articles and advertising. The deadline for submissions is first Friday of the month or Friday after the monthly meeting. Contact the Editor.

The views contained in the Exciter are those of the individual authors, and are not necessarily the views of the Editor, or the Raleigh Amateur Radio Society.

The Raleigh Amateur Radio Society

The Raleigh Amateur Radio Society, Inc. (RARS) was founded in 1969 and continues to serve and support the Amateur Radio community in the greater Triangle area. In 1999, we incorporated a new RARS, and obtained 501(c)(3) Non-Profit tax status.

The objectives of the club are to promote worldwide friend-ship through Amateur Radio; to be of public service by providing radio communications in times of disaster, emergency, or civic need; to educate members in radio technique; and to provide training classes to assist in obtaining Amateur Radio licenses.

Anyone interested in Amateur Radio is eligible to apply for membership. Dues for regular licensed amateurs are \$18.00 per year (from July 1 through June 30). Additional immediate family members pay \$5.00 each per year. Dues for licensed amateurs older than 59 or younger than 16 are \$12.00 per year. Dues for non-licensed Associate members are \$9.00 per year.

Applications for membership may be obtained from the treasurer, or the RARS web site (www.rars.org).

Officers

President:	Bernard Blackmon W4BRB 919-467-8719 bernardb@mindspring.com
Vice-President:	Bob Breyer K1RCB 919-848-7761 breyer@ix.netcom.com
Secretary:	Jim Walter KG4FIJ 919-468-5358 jwalter@nc.rr.com
Treasurer:	Greg Seamster KE4PAX 919-859-0029 ke4pax@arrl.net
Exciter Editor:	Denyse Walter KG4CXR 919-468-5358 kg4cxr@nc.rr.com



INFO

Repeateres in Raleigh:
145.13
146.64
224.64
444.525 (88.5 PL)

WEB SITE <http://www.rars.org>

NEXT RARS MEETING: Tuesday, December 3, 2002 HOLIDAY PARTY

*Entertainment for the whole family
Holiday cookies and beverage will be provided
Bring your own favorite holiday treat to share
with others if you want BUT NOT REQUIRED
Come join us in eating and fun*

COMING EVENTS

Contact Bill KG4CXY 919-469-0785
or go to www.hampublicservice.org



The Central Carolina Helping Hands

Raleigh Marathon

Coordinator: Bill Cole KG4CXY
Date: December 8, 2002
Time: 5:30am-4:00pm

RALEIGH AMATEUR RADIO SOCIETY MEETINGS

Date: First Tuesday of every month

Location: Forest Hills Baptist Church, at Dixie Trail and Clark, In Raleigh

Time: 7:30pm, Folks start showing up a bit before 7 to chat, brag and eat donuts.

VE TESTING: The RARS VEs will accept walk-in testing which is on even months. Please bring a photo ID, your original current license if you have one, and any CSCEs you need for credit. Check into the 8:00 pm net every night on the 146.64 repeater or www.rars.org for information.

RARS came in 3rd in the 7A category in field day this year not far behind #2, and just barely ahead of #4. 7A was busier than usual with 25 entries. The dreaded TRW club was well down the pack this year.

**TUNE IN THE
RARS NEWS HOUR**

♦**Newsline**
♦**ARRL Audio News**
Sunday Nights following the
RARS 8:00 Net on 146.64

FM Committee – RARS Tech Support meetings are held on the 5th Tuesday of any month that has 5 Tuesdays. Meetings are held at Danny Musten's (KD4RAA)

146.88 145.39, 147.105, & 147.135
Repeaters are supported by PCRN.
membership is \$15 a year. Please
make checks to:
PCRN
PO Box 12734
Raleigh, NC 27605

More info on PCRN:
www.qsl.net/w4fal/pcrn

November General Meeting—Nov 5, 2002

7:30 pm called to order by W4BRB.
Treasurers report. 275 members.

Announcements:

Dick KD4ISC talked briefly about RARS traffic training, and presented a certificate to Bob KG4IZA (who unfortunately was not present).

RARS new repeaters are in the hands of Tom N4TAB for benchmarking. 145.13 and 444.525 are almost ready.

Dennis K4DAM had a petition for Franklin County tower ordinance. Evidently a decision made by the county board years ago (and witnessed by a few dozen hams) never got "in the books" and hams have started having trouble with towers and antennas.

ARES - KG4HDT thanked all volunteers at State Fair. He brought a list of activation stages for hams working with ARES/RACES. The new NC EM Director has signed an agreement with ham radio.

N4BYO made a brief announcement about jobs available from a company specifically looking for hams. Call Jim at 781-9437.

JARS tickets giveaway at end of meeting was awarded to Dick KD4ISC

The meeting was adjourned at 7:40 and the Auction began, with Cliff KF4RDP as auctioneer. There were lots of good equipment offered, and lots of items bought and sold.

Submitted by stand-in secretary Gary KN4AQ



Minutes of the RARS September Board Meeting – Sept 17, 2002

The monthly board meeting of the Raleigh Amateur Radio Society was held at the Forest Hills Baptist Church on September 17. The meeting was called to order by President Bernard Blackmon W4BRB at 7:35 PM. Members present were KN4AQ, W4BRB, KG4CXR, KG4FIJ, KA2FWC, K4HF, K4HM, KG4OQA, KE4PAX, NI4S, WA2UZO. The total attendance including guests was 12.

On motion by K4HM and second by KA2FWC, the August 2002 Board Meeting minutes were approved as amended.

V.P. Report: No report.

Treasurer's Report. 267 members

Committee Reports:

FM Committee – KA2FWC reported that work is still progressing on the repeaters. Informed that RARS Tech Support meetings are held on the 5th Tuesday of any month that has 5 Tuesdays. Meetings are held at Danny Musten's (KD4RAA) office.

Exciter – KG4CXR asked for input on publication schedule. Discussion ensued about this matter. It was suggested a "new member" list be included in future issues.

Net Manager – KG4OQA reported nets are going strong. Have several new net controllers, and many check-ins.

Web Master – WA2UZO reported that the Red Cross/State Fair page is on the RARS web site.

Member Services – KG4CXR had nothing to report.

Hamfest – K4HM reported that most positions have been filled. Need someone to help out on the RARS table with Bob K1RCB. Kickoff meeting will be Mon, Sept 30.

Public Information – KN4AQ had nothing to report.

Education – KN4AQ reported that he has information on a video projector for the Club. He will check into it further and report back.

VE Team – No report.

Public Service – No report.

ARRL Liaison – K4HF reported Bob Breyer K1RCB and Dick Orander have been submitted to take the ARRL Amateur Radio Emergency Communications Course.

Nominating Committee – K4HF reported that the slate of nominees for 2003 board should be ready for the October general meeting.

W4DW/W4RNC Trustee – No report.

Ad Hoc Committees: None.

Unfinished Business:

Financial Audit – Report is holding until Jeff AC4ZO returns from out of town.

PCRN Financial Report – KN4AQ reported on PCRN's need for donations, and asked that net check-ins make mention of this.

New Business:

Online Dues Payments – WA2UZO gave a presentation of various online payment programs. Motion was made by KN4AQ, second by K4HM, to authorize Joe WA2UZO to set up a Pay Pal account for online dues payments. Passed unanimously.

Member Comments:

KN4AQ reported that a great time was had at the MS-150.

KE4PAX reported that the annual Shurgard Storage fee is coming due. He was authorized by the President to continue with the service and pay the fee.

NI4S reported the RARS APRS trackers work well.

K4HF echoed KN4AQ's comments about the MS-150.

Adjourned at 9:30 PM.

Respectfully submitted,

Jim Walter KG4FIJ, Secretary.

This picture is from Max KO4TV. It was too good to pass up. The truck is Woody's (KJ4SO) and this is his collection of VHF, UHF and Microwave antennas that were moved from his old house to his new one. A very interesting "Mobile" picture.



RARS NEW MEMBERS

October 2002

RARS welcomes each and everyone. Thank you for considering our club for membership

Melissa KC4HAF

Mark KG4VNL

Target Your Market

Our Complete Line of Direct Mail and Printing Services Include:

- Custom Design & Layout
- Professional Printing
- Mailing Lists
Residential & Commercial
- Mailing Labels
- Ink Jet Addressing
- Sorting - Folding
- Inserting - Metering
- Hand Signatures
- Personal Service



"For All Your Direct Mail & Printing Needs"

919-870-9915

One-Stop
Shopping
Convenience

J. Jay Langley
PO Box 97744
Raleigh, NC 27624
fax: 919-844-0871
PostcardS@bellsouth.net

HAM RADIO ACTIVITY

By Gary KN4AQ

My biggest ham radio activity hasn't been on the air - it's been in print. The first year of editing the Repeater Journal has been somewhat more work than I anticipated. Some of that has been "one-time" stuff. Learning how to do it. Figuring out the advertising and layout. Making a major change in publishing programs and magazine format. I've had to cut way back on other activities that I enjoy, like ARES and public service events, writing for the Exciter, and just getting on the air. Next year I expect things to go smoother, and I can concentrate more on the news and less on the technique.

My most significant on-air activity was helping prepare for APRS on the Tour-de-Cure and MS-150. The three Tracker packages that RARS funded and Jeff AC4ZO built went a long way to making APRS a tool rather than just an experiment. But there's more work to do. The Net Controls at the MS-150 started to use their APRS display to see where some of their assets were, like the Doctor and Supply Trucks.

But the system isn't reliable and foolproof enough by a long shot. Radio coverage from the APRS nodes at both events had too many holes, despite the great job Andy NI4S and Bruce N8UTY did in finding and setting up a main node in New Bern and the auxiliary node in the field. The individual trackers are not quite reliable enough, and we don't have enough experience with them. (One tracker failed when an in-line connector was bumped loose. Another failed for unknown reasons - the radio was putting out gibberish instead of good packets, and felt hotter than it should. I switched it to lower power, turned it off and on, and it started working.) The hams operating from the vehicles that had the trackers didn't know anything about them and couldn't "service" them, and we didn't have time for even a basic training course.

And the APRS+SA program we've used to display the maps is much too complex. It takes a few hours of learning and days of use to know it well enough, especially when it comes to figuring out what's going wrong. And a lot can go wrong. Even when all is working fine, you have to know how to interpret what's on the screen. A block that says "KN4AQ-9" on the map may... or may NOT... mean that station is where the map says it is.

APRS has a lot of potential. When it's reliable, we can put trackers alone where we don't need two-way communication. It can reduce some of the radio traffic (which gets intense) by eliminating a lot of "where are you" inquiries. Having trackers on all SAGS can help the SAG Control keep the vehicles distributed (and keep them all from stopping for lunch at the same time). The event coordinator, maybe the police and perhaps the public, can get an idea of what's happening on the course.

I think we'll see some serious utility at the Raleigh Marathon this year, with more trackers and good node coverage in the city. We need more of the area APRS experts (that's anyone who's spent more than a few weeks setting up

and playing with an APRS station) to help out on these events by setting up trackers, and observing, analyzing and interpreting the information that APRS is presenting, and teaching other hams how to do all that.

MEMORABLE HAM CONTACT

By Max KO4TV

I had a couple of interesting contacts during the past year. First was with the only other "G. M. Bloodworth" Ham in the world, VK4BLG in Toowoomba, Australia. Even though the initials were the same, we had different names, his being Gordon Michael and mine Glenn Max. Turned out that we had both worked in a Narrow Fabric weaving mill (mine while still going to high school and working night shift), and had plenty to talk about concerning Jacquard and Schaum & Uhlinger looms, pick gears, shuttle hooks, heddles and other exotic items. His career was somewhat more exalted than mine: I was a general flunkie and apprentice loom fixer, while he was superintendent of a mill until the Chinese took away all of the business (sounds just like N.C.).

The other contact was with a Ham in Wadesboro, N.C. who was originally from the same area as my family (Oconee County, S.C.). After comparing family notes, we learned that we were cousins, although we had never met (and still haven't, for that matter). You just never know who you might run into on the Ham bands! The big news for the year was our move to the suburbs of beautiful Archer Lodge, N.C., but between the move and several surgeries, we still do not have the antenna farm "planted". If fall doesn't come on too cold and fast, maybe we can at least get a dipole up between the trees and get back on in time for the winter D-X season. That's about it from the KO4TV/KE4DRI homefront.

Editors note: Articles were solicited on "what was your ham accomplishments or learning experiences in 2002".

TECH/TRADER NET

8:30 PM SATURDAY ON 146.64
TWO NETS IN ONE!

FIELD DAY ANNIVERSARY: THE BEGINNING OF MY PERSONAL ADVENTURE

By Kelly Andrews, KD4EWG

As I write this, Field Day 2001 is approaching and with its arrival comes a flood of memories. It was ten years ago as I was programming a new scanner that I stumbled onto the 64 repeater and heard two hams talking about Field Day 1991 coming up in Butner. At the time, I wasn't a ham and had never seriously thought about becoming one. In fact, even though I had owned a collection of Hallicrafters and Hammarlunds from years as a medium wave DXer, I don't recall ever meeting a ham face-to-face. But I knew of the Field Day tradition through reputation and thought seeing one first hand might be interesting.

Lacking specific information, I called Wake Tech to get information and a location for Field Day (thinking they probably had ham radio classes). While they couldn't help, they did route me to Bob Rinn N4VQN. I phoned Bob and introduced myself and started asking questions. In the best tradition of Elmering, Bob responded to my inquiries with friendly, enthusiastic answers and very detailed explanations, and invited me to visit the Field Day site on the upcoming weekend.

When Saturday arrived, there was surprisingly little happening in the Andrews household, so I invited my 13 year old son Brian to ride with me up to Butner to (in my own description) "watch guys stick antennas in the trees and talk on the radio to other stations around the world."

What I expected to be a short adventure to kill a couple of hours turned into something more, a lot more ... an adventure that has lasted 10 years and I hope is nowhere near completion. At Field Day, we were enthusiastically greeted by a group of hams we had never seen before. We visited the novice/tech station, saw handy talkies in action for the first time, learned about computers for logging and packet radio, and saw the HF stations working those stations around the world. All very interesting and impressive, but pretty complicated and intimidating for a first timer. But it was the invitation to stay for a supper of hamburgers and hot dogs that was the real turning point. We had to call home to tell my wife Kit that we wouldn't be home for supper. But how could we do that? It was a long distance call from Butner and we were way out in the woods, nowhere near a phone.

Obviously this was no problem for ham radio operators. Someone pulled out an HT, asked us for our phone number, brought up the 64 repeater and accessed the auto patch. Wow, a miracle of technology; both Brian and I were hooked! We learned that the No Code Tech had just gone into effect and it would be possible to get a license without learning Morse Code. The key would be getting a copy of the study manual "Now You're Talking." Someone suggested ordering it from AES in Milwaukee.

Again fate intervened, since the next week we were leaving on vacation, flying into Milwaukee no less, to spend the week in Wisconsin. The very same Milwaukee that is the home of Amateur Electronic Supply! Remember that I knew ham radio equipment through catalogs (I spent hours looking through Allied Radio, Lafayette Radio Electronics and Bern-

stein-Applebee catalogs), but I not only had never met a ham in my youth, but I had never been to a REAL radio store.

As soon as we landed in Milwaukee and picked up the rental car, our first stop was AES. Talk about a kid in a candy store! Beams and dipoles on the roof, HF radios covering the tables and QSLs lining the walls, and HTs of every make and design on display in the cases. I wanted some of all of this!

To make a long story short, Brian and I got our study manual, went to a RARS test session and got our ham tickets by October 1991. For Brian, KD4EWH, his Yaesu FT-411 soon led to interest in packet radio and being featured in the CQ Magazine packet radio video series. That fascination in packet led to a broader interest in computers, which matured into a degree from NC State in Computer Science and ultimately a job at SAS Institute as fulltime programmer.

For me it was KD4EWG (Eggs With Grits if you're Southern; Echo Whiskey Golf if you're DX). My adventure over the past decade has been different than Brian's, but equally enjoyable. The No Code Tech license introduced me to all the facets of ham radio and rekindled my interest in DXing and collecting QSL cards. First came the license upgrades to General and then to Advanced. Simultaneously the Hammarlund general coverage receiver was replaced by a Drake HF station, which soon gave way to a Kenwood TS-680 (adding the WARC bands and 6 meters) and a couple of G5RVs. With the changes in license class and equipment, there were other changes.

No, I'm still not much on CW and technically, I'm probably little more than an advanced class appliance operator. But ham radio has made a difference. A renewed awareness of world geography, relearning the countries of Africa and the old Russian satellites. And those two years of high school Spanish that I had never used. Check me out on 20 meters stumbling through a real QSO in Spanish with an IOTA DXpedition for a new South American island. It's the only time I've ever used Spanish conversationally but I can make a contact and confirm the QSO.

While I spend most of my ham radio time on HF SSB chasing DX (270 countries so far on 100 watts phone), I still have the HT and mobile rig and regularly visit the 64 repeater. Unfortunately, we'll be out-of-town on Field Day 2001, but Field Day won't be out of my mind. Ham radio has meant a lot to my family and me over the past 10 years and it all started with Field Day.

So as Field Day 2001 nears, I wanted to take a few minutes and say thank you N4VQN and thank you RARS. Good luck W4DW at Field Day. It's been an unbelievable ten years.

73 de KD4EWG.

Editors note: This was an article that was sent in 2001 that didn't make the Exciter. Ham radio can change lives and what better way to start the new year of 2003 is by thinking of the next field day.

INTERNET-PHONE-RADIO SYSTEM

By Bob WB4APR

IPRS is an acronym to describe the potential of a marriage between the global APRS digital network and the global Internet Radio linking project. Combining the first and last letters of IRLP with the final three letters of APRS yields IPRS.

Taking advantage of the voice connectivity of IRLP, recently we have defined many ideas and APRS formats to be able to use APRS as an adjunct data link to facilitate the end-to-end signaling between end users of IRLP using APRS. Further, the mobile APRS data displays make an excellent function for displaying IRLP network data to the mobile user. One of the ultimate objectives of the APRS adjunct to IRLP is the ability of an APRS mobile user to establish an end-to-end voice connection to any other amateur on the planet with no information other than his callsign.

Thus, the IRLP system and the APRS-IS (Internet System) could work together to make the end-to-end voice connection using the nearest available IRLP nodes. At the Radio Amateurs of Canada (RAC) National Convention in Vernon, BC on 26 July, I discussed this concept with Dave Cameron VE7LTD and suggested we might define this marriage as "IPRS". This IPRS term will facilitate further discussions about this revolutionary potential. The following 3-phased approach could be used to arrive at that ultimate objective. The first is MANUAL, the second is ASSISTED and the third is call AUTO-QSY.

MANUAL: APRS user-to-user Call-back message.
(works now)

ASSISTED: Central IPRS server watches global IRLP and APRS-IS system and when seeing IPRS-CQ, sends APRS-QSY message to BOTH users informing them both of the nearest not-in-use IRLP node numbers and frequencies. Users manually QSY and the caller establishes the IRLP link.

AUTO-QSY: End user's radio, on receipt of the APRS-QSY message, will automatically QSY, and central IPRS server will automatically establish the IRLP node links.

IPRS SIGNALLING: Other than the multiple numbering system, I don't have a clear understanding how we are going to make this work across all of the variety of IRLP type systems exploding onto the landscape right now. But I do know that "positions" of nearest non-

busy node will be a nightmare to maintain across multiple systems. And fixed NODE-LISTS will simply not work. Such lists are instantly obsolete the minute they are downloaded. So in the long run, here are my thoughts on IPRS NODES:

IPRS NODES: IPRS nodes will NOT be on big repeaters but will gravitate to smaller and smaller nodes with limited local coverage. Individuals will put them up to cover their local commute only. This is just like cellular. Growth simply means smaller cells. This makes more frequencies available. Five digit numbering plans are a must..

ACTIVITY STATUS: Probably we want these IPRS nodes to identify their status LIVE on the APRS-IS. This is the only way to have cross-platform consistency so that IPRS routing processes have a single point of access to the instantaneous status of each node no matter what its affiliation. To see the status of the "IPRS" system, just look (for now) on APRS-IS. Eventually this will probably spin off to a new global IPRS internet system. But an IPRS signaling channel's FUNCTION will be to allow ANY voice-over-IP system to have ONE common clearing house for finding the status and location of the other end of a desired IPRS QSO. In other words, we are not trying to get into the other systems and muck with their designs, but IPRS will offer a single clearing house for finding the nearest available system for making cross-system calls..

*More information can be found on
www.ew.usna.edu/~bruninga/iprs.html*

NET REPORTS FOR October 2002

- ♦ 8:00PM DAILY: RARS Evening Net
- ♦ 9:00PM MON: SWL SIG
- ♦ 8:30PM SAT : Tech & Traders net

Total Net Activity:

Minutes: 774
Check-Ins: 484 in 35 Sessions
Traffic : 35 brought 27 passed



**The Central Carolina
Skywarn Net Meets
Tuesdays at 9:15 PM
on 146.88 Repeater**

Remember to give damage reports AFTER
the storms as well as DURING the storms.

NEW SKYWARN MONTHLY DINNER MEETING
by Denyse KG4CXR AEC Wake County

The monthly Skywarn meeting was held Sunday Oct 27, at Ryan's Steakhouse in Cary. Updates were given on El Nino which may cause more precipitation this year. December 7 will be the Skywarn field day at the NWS. If anyone is interested in joining us, please contact Bob WX4MMM. The next Skywarn meeting will be Nov 24, at Ryan's Steakhouse in Cary at 5:00pm.

Fat Daddy's

**Join Us At the
RARS Dinner**



**Every 4th Tuesday, 6:30 pm at
Fat Daddy's on Glenwood Ave.**

Every Wednesday 9:30 145.19 (156.7)



HAMFEST CALENDAR

- November 17: Benson, NC
- December 7: Union, SC
- January 11: Greenwood, SC
- January 26: Odenton, MD
- February 1: N. Charleston, SC
- February 9: Richmond, VA
- February 22: Dalton GA



Courtesy of the SERA Repeater Journal

The Autism Ribbon Run was held in October located in downtown Raleigh. This event was a 5K and one mile charity run. Bob K1RCB was the coordinator for this event.



Coordinator Bob K1RCB



One of our newest ham in his first event Noah KG4VDN



New Ham Robert KF4QHG

Photos by Robert K2RTB

The MS Pooch Parade was held Sat. Nov 2 in Chapel Hill NC. This event was a one mile walk for people and their small pooches and a three mile walk for big pooches and people that think big.



Left to Right, Bob KG4IZA, Bob's wife Jayne, Larry KG4FIQ, Annie KG4SWI Event Coordinator, Vince KF4ZMV and Chuck K4HF. Missing: Greg KG4AWG, Mike N4FEP, Dick KD4ISC and Noah KG4VDN

Photo by Bill KG4CXY

2002 NC State Fair Red Cross Communications

On behalf of Kathy Ellen and Bernard Blackmon W4BRB, I would like to thank everyone who volunteered to support the Red Cross Communications at the state fair this year. I would also like to thank Gary Pearce for composing another excellent operators manual. There are many lessons to be learned from participating in events such as this one, and we try to do a better job each year. So mark your calendars and see you next year.

Those involved this year: Mary KG4OQA, Bruce KC4UQN, Bernard W4BRB, Kerrell W4KGL, Ken K7UGT, Tina, Clare N2RJB, Bob K1RCB, Marian K1MRB, Greg KG4AWG, Mike KC4WUH, Lee WB4DRJ, Bob KG4IZA, Wayne KD4SLQ, Larry KG4FIQ, Chuck K4HF, Ashby W5PGX, Bud KG4IJQ, Maury AG4QZ, Gary KN4AQ, Matt KG4MYD, Mike WD4MGP, Steve KG4KHQ, Noah KG4VDN, John N3DWE, Ashby Jr. W5PZIH

Thanks again. John KG4HDT



Mike KC4WUH and Ashby W5PZIH

Photos by Robert K2RTB



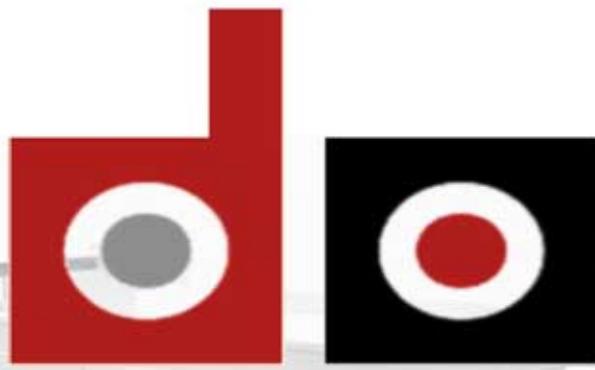
Marian K1MRB

- Digital print-on-demand
- Both small and large format
- Color and black & white
- High-volume print solutions
- One-to-one marketing solutions
- Full service bindery and finishing

www.docusourceofnc.com

951 Aviation Parkway
Suite 600
Morrisville, NC 27560
919-459-5900

Centrally located in the heart of the Triangle!



DOCUSOURCE

relax; **docusource** it.



RARS AUCTION

The yearly auction was held on Nov. 6, 2002 at the Forest Hills Baptist Church. Cliff KF4RDP was the auctioneer and this year was an exceptional one with several great items. Time was limited so deals had to go fast.



Photos by Gary KN4AQ